

### **REMARKS**

The Examiner is thanked for the courtesies extended during the telephonic interview conducted on December 6, 2007.

In accordance with the discussions during the interview, claims 1 and 15 have been amended to clarify (i) that the parameters in paragraph (a) of change of the catalyst temperature, change of the exhaust gas temperature and change of the exhaust gas mass flow rate are "with respect to time"; and (ii) that the "rate of change ..." parameters in paragraph (b) also are "with respect to time". These clarifying amendments are supported in the specification, for example, at page 3, lines 7-18, and, furthermore, do not change the scope of the claimed invention.

As to the claim objections, claim 19 has been amended to depend from claim 17, which provides an antecedent basis for "the at least two catalysts" recited in claim 19. In addition, claim 28 has been amended to delete the "diesel engine" limitation, and claim 21, from which claim 28 depends, has been amended to recite that the multicylinder engine is a gasoline engine or "a diesel engine". Therefore, claim 28 has been amended to overcome the Examiner's objection that claim 28 is confusing because gasoline is different from a diesel fuel.

Accordingly, the amendments to claims 1 and 15, and also to claims 19, 21 and 28, do not introduce new subject matter and place the application in condition for allowance. Claims 1-28 are presently pending.

In view of such amendments and the following remarks, reconsideration and allowance of the claims, as presently presented, are respectfully requested.

### **EXAMINER'S ACTION**

### The 35 U.S.C. §§ 102 and 103 Rejections

Claims 1-9, 13-18, 20-26 and 28 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,244,043 ("Farmer *et al.*"). In addition, claims 19 and 27 were rejected as being obvious over Farmer *et al.*, and claims 10-12 were rejected as being obvious over Farmer *et al.* in view of applicant's admitted prior art.

As discussed during the Examiner interview, independent claims 1 and 15, as amended to clarify that the parameters of "change ..." in paragraph (a), and also the parameters of "rate of change ..." in paragraph (b), are "with respect to time", clearly are patentable over Farmer *et al.*

Claims 1 and 15, as amended, are directed to controlling the temperature of at least one catalyst in an exhaust gas cleaning system where, in relevant part, energy is introduced into the exhaust gas cleaning system by a lambda split. According to amended claims 1 and 15, the introduction of energy is limited depending on: "(a) at least one of catalyst temperature, exhaust gas temperature exhaust gas mass flow rate, change of the catalyst temperature with respect to time, change of the exhaust gas temperature and change of the exhaust gas mass flow rate with respect to time; and (b) at least one of rate of change of the catalyst temperature with respect to time, rate of change of the exhaust gas temperature with respect to time and rate of change of the exhaust gas mass flow rate with respect to time." As discussed in the application and with the Examiner, each of the parameters in paragraph (b) constitutes a second derivative with respect to time. (See application, for example, page 3, lines 16-18).

As further discussed during the interview, Farmer *et al.* does not disclose or suggest limiting the introduction of energy depending on a parameter that is a first

derivative with respect to time, namely, "change of the catalyst temperature with respect to time", and also depending upon on parameter that is a second derivative with respect to time, namely, the "rate of change ... with respect to time" parameters in paragraph (b) of claims 1 and 15. Farmer *et al.* is technically imprecise and unclear in its description of the temperature control routine of FIG. 2 and, thus, cannot be understood to disclose limiting the introduction of energy based on parameters which constitute a first derivative with respect time, and furthermore based on parameters constituting a second derivative with respect to time. Referring to Farmer *et al.*, in step 212, the projected change in trap temperature ( $\Delta T$ ) is calculated based on the difference between the current temperature value ( $T$ ) and the previous temperature value ( $T_{pre}$ ). Although the phrase "divided by the sample time ( $\Delta time$ )" is included in the description of step 212 (see Col. 4, ln. 31-31) and in FIG. 2, the computation intended, and ultimately described, by Farmer *et al.* for step 212 is determining a projected temperature difference between the current sample and the previous sample. Such computation is performed by determining the difference between the current temperature, which is in degrees, and the previous temperature, which also is in degrees. Consequently, the dimensions of the result of the computation, *i.e.*, the computed projected temperature, also must be in degrees. The statement "divided by the sample time ( $\Delta time$ )" is nonsensical, because the sentences at Column 4, ln. 34-42, which describe computation steps subsequent to the step 212, concern computations that solely involve temperature and result in a temperature value (which is in degrees) in step 218.

Thus, as discussed with and agreed upon by the Examiner, Farmer *et al.* fails to disclose limiting the introduction of energy based on parameters that are in the form of a first derivative with respect time, and furthermore based on parameters that are in the form of second derivatives with respect time, as recited in claims 1 and 15.

Accordingly, claims 1 and 15 are patentable over Farmer *et al.*

Further, claims 2-14 and 16-28, which depend directly or indirectly from claims 1 or 15, are also patentable over Farmer *et al.* for the same reasons as set forth above with respect to claim 1 and because of the further restrictions they add.

Withdrawal of the Section 102 and 103 rejections is, therefore, respectfully requested.

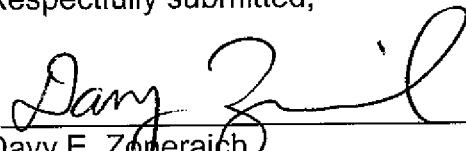
#### **CONCLUSION**

For the foregoing reasons, it is believed that all of the claims, as presently presented, are patentable.

The Examiner is invited to telephone the undersigned if it is believed that further amendment and/or discussion would help to advance the prosecution of the present application.

Reconsideration and allowance of claims 1-28 are, therefore, respectfully requested.

Respectfully submitted,

  
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